

CLAIMS

- 1.- A method for detecting an error condition associated with a load (R_L) or a connection (P) to the load (R_L) comprising:
 - during a first diagnosis phase determining whether the load (R_L) or the connection (P) to the load (R_L) is in a normal operation condition or in an error condition, and
 - if the load (R_L) or the connection (P) to the load (R_L) is in an error condition, during a second diagnosis phase determining whether the error condition is an open load condition, short circuit condition to ground or a short circuit condition to a power supply,
wherein the second diagnosis phase comprises changing a first parameter associated with the load in an attempt to escape from said error condition.
- 5 2.- A method according to claim 1, wherein changing a first parameter comprises changing the polarity of a current flowing in or out the load (R_L).
- 10 3.- A method according to claim 1, wherein changing a first parameter comprises changing the amplitude of a current flowing in or out the load (R_L).
- 15 4.- A method according to claim 2, wherein changing a first parameter furthermore comprises changing the amplitude of a current flowing in or out the load (R_L).
- 20 5.- A method according to claim 3, wherein changing the amplitude of the current is such that the amplitude of the current is larger than a minimum level, said minimum level being defined by formula:

$$I_{DiagMin} = \frac{\Delta V \cdot A_{ext}}{t}$$

- 25 6.- wherein ΔV is a reference voltage, A_{ext} is a memory value of an energy storing element present in the load (R_L) and t is the time between the change of the amplitude of the current and a moment of measuring a voltage.
- 30 7.- A method according to claim 1, the load (R_L) being in a starting state before the first diagnosis phase, the method further comprising carrying out, after the second diagnosis phase, a resetting phase for resetting the load (R_L) to the starting state.

- 7.- A method according to claim 1, wherein the first diagnosis phase comprises monitoring whether a second parameter associated with the load (R_L) is below a first pre-determined low level or is above a second pre-determined high level, and if so, reporting that the load (R_L) is in an error condition.
- 5 8.- A method according to claim 7, wherein monitoring a second parameter comprises monitoring a current flowing in or out the load (R_L) or a voltage drop across the load (R_L).
- 9.- A method according to claim 6, wherein the resetting phase comprises changing a third parameter associated with the load (R_L).
- 10 10.- A method according to claim 9, wherein changing a third parameter comprises changing a current flowing in or out the load (R_L).
- 11.- An error detection apparatus for detecting an error condition associated with a load (R_L) or a connection (P) to the load (R_L) comprising:
 - first diagnosis means for determining whether the load (R_L) or the connection (P) to the load (R_L) is in a normal operation condition or in an error condition and
 - second diagnosis means for, if the load (R_L) or the connection (P) to the load (R_L) is in an error condition, determining whether the error condition is an open load condition, a short circuit condition to ground or a short circuit condition to power supply and
- 15 wherein the second diagnosis means comprises means for changing a first parameter associated with the load (R_L) in an attempt to escape from said error condition.
- 20 12.- An error detection apparatus according to claim 11, wherein said means for changing a first parameter comprises means for changing the polarity of a current flowing in or out the load (R_L).
- 25 13.- An error detection apparatus according to claim 11, wherein said means for changing a first parameter comprises means for changing the amplitude of a current flowing in or out the load (R_L).
- 30 14.- An error detection apparatus according to claim 12, wherein said means for changing a first parameter furthermore comprises means for changing the amplitude of a current flowing in or out the load (R_L).

- 15.- An apparatus according to claim 11, wherein the load (R_L) comprises an energy storing element (C_{ext}).
- 16.- An apparatus according to claim 11, for detecting an error condition on the load (R_L) in a starting state, the apparatus further comprising resetting means for resetting the load (R_L) to the starting state.
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- 17.- An apparatus according to claim 11, wherein the first diagnosis means comprises means for monitoring whether a second parameter associated with the load (R_L) is below a first pre-determined low level or is above a second pre-determined high level, and reporting means for reporting that the load (R_L) is in an error condition.
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- 18.- An apparatus according to claim 17, wherein the second parameter is a current flowing in or out the load (R_L) or a voltage drop across the load (R_L).
- 19.- An apparatus according to any of claims 16, wherein the resetting means comprises means for changing a third parameter associated with the load (R_L).
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